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## Disease in Nursery and Grower/Finisher Pigs in 2000 and 2006—and Vaccine and Antimicrobial Use in 2006

In 2000 and 2006, the USDA's National Animal Health Monitoring System (NAHMS) conducted studies on swine health and management practices from a random sample of swine production sites with 100 or more pigs in 17 States\*. These States represented approximately 94 percent of U.S. pig inventory and 94 percent of U.S. pork producers with 100 or more pigs.

### Disease in nursery pigs, 2000 and 2006

The percentages of sites in which producers suspected Glasser's disease and swine influenza in nursery pigs during the previous 12 months more than doubled from 2000 to 2006 (7.3 to 17.4 percent and 7.5 to 24.6 percent, respectively) [table 1]. The percentage of sites with porcine circovirus associated disease (PCVAD) in nursery pigs nearly quadrupled from 5.7 percent in 2000 to 22.3 percent in 2006, perhaps because producers and veterinarians are now more aware of the syndrome and therefore more likely to recognize and report it.



Photo courtesy of National Pork Board

#### \*States

Arkansas, Colorado, Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Carolina, Ohio, Oklahoma, Pennsylvania, South Dakota, Texas, and Wisconsin.

Table 1. Percentage of Sites in Which the Following Disease Problems were Known or Suspected to have Caused Sickness or Mortality in One or More Nursery Pigs During the Previous 12 Months

Disease	Percent Sites	
	2000	2006
APP ( <i>Actinobacillus pleuropneumoniae</i> )	6.4	2.9
Glasser's disease ( <i>Haemophilus parasuis</i> )	7.3	17.4
<i>Mycoplasma pneumonia</i>	19.6	29.4
Influenza	7.5	24.6
PRRS (Porcine reproductive and respiratory syndrome)	17.5	26.6
<i>Salmonella</i>	6.6	8.9
Swine dysentery	3.2	4.8
TGE (transmissible gastroenteritis)	1.0	1.8
<i>E. coli</i> diarrhea	24.0	31.8
Edema disease	6.1	9.0
PCVAD (porcine circovirus associated disease) <sup>2</sup>	5.7	22.3
Greasy pig disease ( <i>S. hyicus</i> )	25.3	27.5
<i>Streptococcus suis</i> ( <i>S. meningitis</i> )	31.6	49.9
Roundworms	18.0	15.8

<sup>1</sup>This table reflects producer opinion, which may or may not have been confirmed by a veterinarian or laboratory diagnosis.

<sup>2</sup>Formerly known as PMWS.

### Vaccine use in nursery pigs, 2006

Over half of all sites with nursery pigs (52.6 percent) vaccinated these pigs against *Mycoplasma*, ranging from 46.3 percent of small sites to 81.2 percent of large sites. On average, sites first vaccinated nursery pigs against *Mycoplasma pneumonia* at 4.4 weeks of age in 2006. Fewer than 1 in 10 sites (8.8 percent) vaccinated nursery pigs against PRRS (table 2).

Approximately 1 in 10 sites vaccinated against both swine influenza H1N1 or H3N2 and either H1N1 or H3N2. Sites first vaccinated nursery pigs against swine influenza at about 6.0 weeks of age.

**Table 2. Percentage of Sites that Usually Vaccinated Pigs Against the Following Diseases While in the Nursery Phase, by Size of Site**

	Percent Sites Size of Site (Total Inventory)			All Sites
	Small (Fewer than 2,000)	Medium (2,000- 4,999)	Large (5,000 or More)	
<b>Vaccinated Against . . .</b>	<b>Percent</b>	<b>Percent</b>	<b>Percent</b>	<b>Percent</b>
<i>Mycoplasma</i>	46.3	62.2	81.2	52.6
PRRS	7.9	9.8	13.6	8.8
Swine influenza H1N1	6.7	22.1	20.0	10.4
Swine influenza H3N2	6.0	19.7	20.0	9.6
Both H1N1 and H3N2	6.0	17.5	20.0	9.2
Either H1N1 and H3N2	6.7	24.4	20.0	10.8

### Decisions about antimicrobial use in nursery pigs, 2000 and 2006

The percentage of sites in which the farm manager was the primary decision-maker concerning which antimicrobials were used to treat sick nursery pigs increased from 3.2 percent in 2000 to 9.2 percent in 2006. The percentage of sites in which the company veterinarian or nutritionist was the primary decision-maker increased from 2.5 percent in 2000 to 8.7 percent in 2006. The percentage of sites in which the local veterinarian decided which antimicrobials were used decreased from 14.2 percent in 2000 to 7.6 percent in 2006 (table 3).

**Table 3. Percentage of Sites by Person Primarily Responsible for Deciding Which Antimicrobials were Used to Treat Sick Nursery Pigs**

Primary Decision-maker*	Percent Sites	
	2000	2006
Owner of operation	75.3	67.0
Farm manager, not the owner	3.2	9.2
Local veterinary practitioner	14.2	7.6
Consulting or second-opinion veterinarian	1.1	1.3
Company veterinarian or company nutritionist	2.5	8.7
Service manager who oversees more than one site	3.2	3.7
Other primary	0.1	1.4
Did not use antimicrobials for sickness in nursery pigs	0.4	1.1
Total	100.0	100.0

\*The owner and farm manager categories do not reflect whether or not antimicrobial decision protocols were developed with veterinary input.

In 2006, the percentage of sites in which the owner was the primary decision-maker regarding antimicrobial use in sick nursery pigs decreased as size of site increased. Also, in 2006 a higher percentage of large and medium sites than small sites relied primarily on a company veterinarian or nutritionist to make decisions regarding antimicrobial use.

### Antimicrobial use in nursery pigs, 2006

Producers were asked which antimicrobials were used for nursery pigs during the previous 6 months for any reason and the route of administration (injection, feed, water). Table 4 shows the top-three antimicrobials given to nursery pigs for any reason by route of administration.

The most common antimicrobials given by **injection** to nursery pigs for any reason were ceftiofur and procaine penicillin G (43.0 and 43.9 percent of sites with nursery pigs, respectively). A common primary reason to give these antimicrobials was to treat respiratory disease.

For sites with nursery pigs, 43.2 percent of sites administered chlortetracycline, 31.1 percent administered carbadox, and 25.9 percent administered tiamulin via **feed**. A common primary reason to give these antimicrobials was disease prevention.

Overall, 40.3 percent of sites with nursery pigs administered an antimicrobial via **water**. Amoxicillin was the most common antimicrobial administered via water (19.1 percent of sites).

**Table 4. Percentage of Sites that Gave Any Nursery Pigs the Following Antimicrobials or Feed Additives During the Previous 6 Months, by Route of Administration**

Antimicrobial Given by Injection	Percent Sites
Procaine penicillin G	43.9
Ceftiofur	43.0
Oxytetracycline	19.9
Antimicrobial Given in Feed	Percent Sites
Chlortetracycline	43.2
Carbadox	31.1
Tiamulin	25.9
Antimicrobial Given in Water	Percent Sites
Amoxicillin	19.1
Neomycin and terramycin	6.5
Chlortetracycline	5.4

## Disease in grower/finisher pigs, 2000 and 2006

The percentages of sites that reported suspected or known problems in grower/finisher pigs with Glasser's disease, swine influenza H1N1 or H3N2, PRRS, hemorrhagic bowel syndrome, and PCVAD increased from 2000 to 2006, while the percentage of sites with atrophic rhinitis in grower/finisher pigs decreased.

The percentage of sites with PCVAD in grower/finisher pigs increased from 3.6 percent in 2000 to 31.3 percent in 2006. As was the case with the substantial increase in PCVAD in nursery pigs, this nine-fold increase in grower/finisher pigs may be due in part to a higher awareness of the syndrome among producers and veterinarians as well as a possible increase in incidence. When PCVAD was present, 53.9 percent of sites in 2000 diagnosed it by using a veterinarian or laboratory compared with 69.7 percent of sites in 2006.

In 2006, porcine dermatitis and nephropathy syndrome (PDNS)—now considered a component of PCVAD—was a known or suspected disease problem in grower/finisher pigs during the previous 12 months on 6.0 percent of sites and was diagnosed by a veterinarian or laboratory on 79.5 percent of sites that reported it. The prevalence of PDNS was not surveyed in 2000.

**Table 5. Percentage of Sites In Which the Following Disease Problems were Known or Suspected to Have Caused Sickness or Mortality in One or More Grower/Finisher Pigs During the Previous 12 Months**

Disease Problem	Percent Sites <sup>1</sup>	
	2000	2006
APP ( <i>Actinobacillus pleuropneumoniae</i> )	8.1	8.5
Glasser's disease ( <i>Haemophilus parasuis</i> )	5.4	18.7
<i>Mycoplasma pneumonia</i>	29.0	39.5
Swine Influenza (H1N1 or H3N2)	13.7	36.4
Porcine reproductive and respiratory syndrome (PRRS)	16.6	30.2
<i>Salmonella</i>	8.4	12.0
Pseudorabies	1.1	0.0
Atrophic rhinitis	14.0	5.7
Hemorrhagic bowel syndrome	18.4	36.5
Ileitis ( <i>Lawsonia intracellularis</i> )	36.9	41.7
Swine dysentery	1.7	2.8
Gastric ulcers	19.3	28.3
Erysipelas	4.1	4.0
PCVAD (porcine circovirus associated diseases) <sup>2</sup>	3.6	31.3
Roundworms	19.6	15.5

<sup>1</sup>This table reflects *producer opinion*, which may or may not have been confirmed by a veterinarian or laboratory.

<sup>2</sup>Formerly known as PMWS. Survey question read "... postweaning multisystemic wasting syndrome (PMWS aka PCVAD)."

## Vaccine use in grower/finisher pigs, 2006

In 2006, about 4 percent of sites with grower/finisher pigs vaccinated pigs against *Mycoplasma pneumonia* during the previous 12 months, ranging from 2.9 percent of small sites to 7.8 percent of large sites (table 6). A lower percentage of sites with a grower/finisher phase vaccinated against *Mycoplasma*, PRRS, and swine flu H1N2 and H3N2 than sites with a nursery phase (see table 2).

**Table 6. Percentage of Sites that Usually Vaccinated Pigs Against the Following Diseases While in the Grower/Finisher Phase, by Size of Site**

Vaccinated Against . . .	Percent Sites Size of Site (Total Inventory)			
	Small (Fewer than 2,000)	Medium (2,000- 4,999)	Large (5,000 or More)	All Sites
	Percent	Percent	Percent	Percent
<i>Mycoplasma</i>	2.9	6.3	7.8	4.1
PRRS	0.0	0.0	0.0	0.0
Swine influenza H1N1	1.7	6.1	15.1	4.2
Swine influenza H3N2	1.9	4.2	15.1	3.9
Both H1N1 and H3N2	1.7	4.2	15.1	3.8
Either H1N1 or H3N2	1.9	6.1	15.1	4.3

## Decisions about antimicrobial use in grower/finisher pigs, 2000 and 2006

The percentage of sites in which the owner of the operation was the primary decision-maker concerning which antimicrobials were used to treat sick grower/finisher pigs decreased from 73.6 in 2000 to 57.7 percent in 2006. The percentage of sites in which the farm manager was the primary decision-maker increased from 3.0 percent in 2000 to 9.3 percent in 2006, and the percentage of sites in which a company veterinarian or nutritionist was the primary decision-maker increased from 2.9 percent in 2000 to 11.4 percent in 2006 (table 7).



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**Table 7. Percentage of Sites by Person Primarily Responsible for Deciding Which Antimicrobials were Used to Treat Sick Grower/Finisher Pigs**

Percent sites		
Primary Decision-maker*	2000	2006
Owner of operation	73.6	57.7
Farm manager, but not the owner	3.0	9.3
Local veterinary practitioner	11.0	8.1
Consulting or second-opinion veterinarian	1.2	3.0
Company veterinarian or company nutritionist	2.9	11.4
Service manager who oversees more than one site	6.8	9.9
Other primary decision-maker	0.1	0.1
Did not use antibiotics for sickness in grower/finisher pigs	1.4	0.5
Total	100.0	100.0

\*The owner and farm manager categories do not reflect whether or not antimicrobial decision protocols were developed with veterinary input.

In 2006, the owner was the primary decision-maker regarding antimicrobial use in sick grower/finisher pigs on 67.9 percent of small sites and 29.0 percent of large sites. Large sites were more likely than small sites to use a company nutritionist or company veterinarian for antimicrobial decisions.

### Antimicrobial use in grower/finisher pigs, 2006

Producers were asked which antimicrobials they used for grower/finisher pigs during the previous 6 months for any reason and the route of administration (injection, feed, water). Table 8 shows the top-three antimicrobials given to grower/finisher pigs for any reason and the route of administration.

The most common antimicrobials given by **injection** to grower/finisher pigs for any reason were procaine penicillin G and ceftiofur (46.6 and 42.1 percent of sites, respectively). The most common reasons to give these or any antimicrobials were to treat respiratory disease. Overall, 63.7 percent of sites with grower/finisher pigs used an injectable antimicrobial to treat respiratory disease during the previous 6 months.

The most common antimicrobials administered via **feed** to grower/finisher pigs were chlortetracycline (52.6 percent of sites), tylosin (44.2 percent of sites), and bacitracin (29.1 percent of sites).

The most common reasons sites with grower/finisher pigs used antimicrobials in **water** were to treat respiratory disease and enteric disease (42.4 and 15.8 percent of sites, respectively).

**Table 8. Percentage of Sites that Gave Any Grower/Finisher Pigs the Following Antimicrobials During the Previous 6 Months, by Route of Administration**

Antimicrobial Given by Injection	Percent Sites
Procaine penicillin G	46.6
Ceftiofur	42.1
Oxytetracycline	20.4
Antimicrobial Given by Feed	Percent Sites
Chlortetracycline	52.6
Tylosin	44.2
Bacitracin	29.1
Antimicrobial Given by Water	Percent Sites
Chlortetracycline	18.8
Oxytetracycline	16.2
Neomycin	10.7

Complete descriptive reports and other information sheets from NAHMS Swine Studies are available at: <http://nahms.aphis.usda.gov>

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